Abstract

This is a joint work with Jairo Bochi, Abel Rios Bravo and Marcelo Viana. Let f be a volume preserving ergodic diffeomorphism over a compact manifold and A a continuous SL（2， R） cocycle. The Lyapunov exponent of the cocycle A， λ(A) is defined as the limit

$$\lim \frac{1}{n} |\mathcal{A}(f^{n-1}(x)) \circ \cdots \circ \mathcal{A}(x))|$$

for Lebesgue almost every x. Oseledets theorem ensures that the previous limit is independent with the choice of point x in a full volume subset. By the theorem of Bochi-Mane, if the cocycle A is a continuous point of λ (A) and has non-vanishing exponent, then it has to be uniformly hyperbolic.

For a long time, such theorem was thought to be true for invertible maps. Only recently, it was shown by Viana and Yang that, the statement is in general false for the diffeomorphism f to be uniformly expanding. There are plenty of continuous cocycles which are not uniformly hyperbolic, with non-vanishing exponents, and are continuous point of the Lyapunov exponent

function where we consider C^0 topology for the cocycles.

In this talk, we are going to show that the previous counter example are continuous points of cocycles in a much weak topology: local topology. As an application, we show that for most of cocycles, if we do Dehn-twist type of perturbation, the Lyapunov exponent will change continuously.